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(54) TRAP FOR INSECTS

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ABSTRACT OF THE DISCLOSURE.

An insect trap, especially for extermination of typographer bark beetles, comprising a tubular housing having a plurality of openings in the walls thereof through which the insects can crawl. A collector chamber for the insects is placed at one end of the tube, and a lid at the other end. The trap contains a bait substance to attract the insects. The tube has radially-protruding projections, and the openings are provided between the projections. The projections constitute peripheral ridges, either circular or spiral in shape, and the openings are disposed near the upper surface of the projections.

The present invention pertains to a trap for insects, especially for the extermination of typographer bark beetles.

Drought-weakened spruce forests have provided new and extensive feeding grounds for the typographer bark beetle. The beetle population is large in the spruce forest districts over all of southern Norway, and the danger of substantial new attacks on the old spruce forest in coming years is imminent. It has therefore been found necessary to work consciously and systematically to counteract the typographer bark beetle.

10 It has been found that these particular beetles emit a certain odor when a beetle finds a favorable feeding ground, for example, a drought-damaged spruce. It has proved possible to synthesize this odor, and the substance is marketed under the trade name "Feromon". This substance is thus very suitable for use in connection with insect traps.

20 Insect traps are known, e.g., from Norwegian Patent No. 85,185, issued March 14, 1955 to Krogsaeter, which consist of a tubular body having a plurality of openings through which insects can enter, with a collector chamber for the insects at one end and a lid at the other end, and containing a bait substance to attract the insects.

The purpose of the present invention is to improve the previously known traps of this type.

According to the invention, therefore, traps of the general type defined above are characterized in that the tube has radially-projecting protrusions, and that the openings are provided between the protrusions. A preferred embodiment of the tube is characterized in that the projections comprise peripheral ridges, either circular or spiral in shape.

30 An important feature of the invention is that the openings are arranged near the upper surface of the projections.



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Another feature of the invention is that the outer surface of the tube is rough. An additional advantage is obtained if the inner surface of the tube is also rough, at least in the area around every opening.

A further feature of the invention is that the holes have a diameter of between 2 and 3 mm. Preferably, the tubes of the traps according to the invention are between 1 and 3 meters long and are dark in color on the outside, for example, black.

10 Experiments have been carried out using traps of the type defined above, and these traps have demonstrated especially good results as compared with traps made in other ways. The trap was fastened vertically on a pole and was placed in a cleared area of the forest about 1/2 to 1 meter above the ground. The odor of the "Feromon"-bait which was placed inside the tube attracts the beetles to enter the tube through the holes. Traps made in accordance with the invention captured about 20,000 beetles in the course of a two-week period in May-June 1978. The reason that these traps exhibit such good results is connected with the fact that the projections, i.e., the ridges, offer a good landing site for the insects. It is then natural for the insects to try to move inwards toward openings through which they can crawl. The insects will find these openings in the tube wall areas between the projections. It has also been found to be important that the holes be placed near the upper surface of the projections. The insects land on the projections and crawl inwards, being attracted by the odor of the substance emanating from the holes. It is thus important that the holes lie flush with the upper surface of the projections, such that the insects do not have to crawl upwards on the vertical tube portion between the projections.

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30 The dark color of the tube results in an elevated temperature inside the tube; evaporation of the bait substance increases with increasing temperature and will thus be high precisely in the periods of hot weather when the beetles are on the wing. The provision of a roughened surface also seems to increase the number of insects captured. It has also been observed that when the insects are going to crawl in through the opening, they use their feelers to examine the conditions inside the hole. If the inner surface is too smooth, the beetles will withdraw and

crawl out again. Therefore, providing a roughened surface inside the tube, at least around the hole openings, is very desirable. Experiments have also shown that relatively long tubes are better traps than shorter tubes. The catch per running meter was greatest with tubes of 1-1/2 to 2 meters in length.

The invention will be explained in greater detail in the following with reference to the drawings, which show one embodiment of the insect trap of the invention.

10 Figure 1 shows a cross section through a trap made in accordance with the invention, with a detail of the trap also shown on an enlarged scale.

Figure 2 is a detail drawing of the lower portion of the trap.

The trap consists of a tubular body 1 with radially-projecting ribs 2. In the tube wall between the ribs, a large number of openings 3 are cut into the tube. At the upper end of the tube 1 there is a lid 4. A bait substance 5 to attract the insects is suspended inside the tube from the lid 4.

20 The tube 1 terminates at the bottom in a funnel 6 which in turn is connected to a collector bottle 7 for the trapped insects. When in use in the forest, the trap is attached to a vertical pole 8.

30 The bottom of the tube 1 can be provided with a thread for engagement with a fixed, internally-threaded collar 9 at the upper, wide-mouthed opening of the funnel 6. If the radial projections 2 have the form of spiral-shaped ridges, these can be used for engagement with the thread in the collar 9. The upper free edge of the funnel 6 is formed as an upwardly and inwardly sloping lip 10. Provided above the lip at the lower end of the tube 1 are drainage openings 11. Drainage openings 12 are also provided at the lower portion of the collar 9. The purpose of these openings is to catch water, resulting perhaps from condensation inside the tube, and to drain it off such that it does not run down into the container 7; the openings thus prevent the container from becoming filled with water, which would impair the functioning of the trap.

A fixed collar 14 is also provided at the narrow end 13 of the funnel 6; the collar 14 having internal threads which engage with external threads on the neck 15 of the container 7. The outer, pointed end 16 of the funnel 6 penetrates a distance inside the container 7 and thus functions in the same way as the funnel-shaped entrance in a fish trap or lobster pot.

10 It has been shown that when the insects enter the tube through the openings, they lose their footing and fall down inside the tube. Because the beetles require a certain length of time to open their wings, they fall all the way down into the container 7. They are then unable to fly up again because their flying capabilities are relatively poor. In addition, the narrow mouth 16 of the funnel provides an additional safeguard against the insect's being able to leave the container even if it does try to fly.

The invention should not be construed as being limited to the embodiment illustrated in the drawings and described above, but can be altered and modified and still remain within the scope outlined in the appurtenant patent claims. For example, the
20 water drop collector (the lip 10) might be placed higher up or lower down, for example, at the lower end of the funnel, above the collar 14.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:-

1. An insect trap, especially for exterminating typographer bar beetles, comprising a tubular housing having a plurality of openings in the walls thereof through which the insects can crawl, a collector chamber for the insects at one end of the tube, a lid at the other end, and containing a bait substance to attract the insects, the tube having radially-protruding projections, and said openings being provided between the projections.
2. An insect trap according to claim 1, wherein the projections constitute peripheral circular or spiral ridges.
3. An insect trap according to claim 1 or 2, wherein the openings are disposed near the upper surface of the projections.
4. An insect trap according to claim 1, wherein the tube has a rough outer surface.
5. An insect trap according to claim 4, wherein the inner surface of the tube is also rough, at least in an area around each opening.
6. An insect trap according to claim 1, wherein the openings have a diameter of between 2 and 3 mm.
7. An insect trap according to claim 1, wherein the tube is between 1 and 3 meters long.
8. An insect trap according to claim 1, wherein the trap is dark in color on the outside.
9. An insect trap according to claim 1, wherein a funnel is arranged at the lower end of the tube with the wide-mouthed opening of the funnel being fastened to the tube, and a container is fastened to the narrow end of the funnel in such a way that the

pointed end of the funnel penetrates a distance inside the container.

10. An insect trap according to claim 1, wherein at the lower end of the tube, an internal water drop collector is provided in the form of an annular, peripheral and upwardly-sloping lip, and drainage openings through the tube wall are provided at the top side of the lip.

11. An insect trap according to claim 10, wherein the lip is disposed at the upper, free edge of the funnel.

12. An insect trap according to claim 9, wherein the opening of the funnel at the pointed end is at least 15 mm in diameter.

13. An insect trap according to claim 9, wherein the pointed end of the funnel projects 10 - 15 mm into the container.



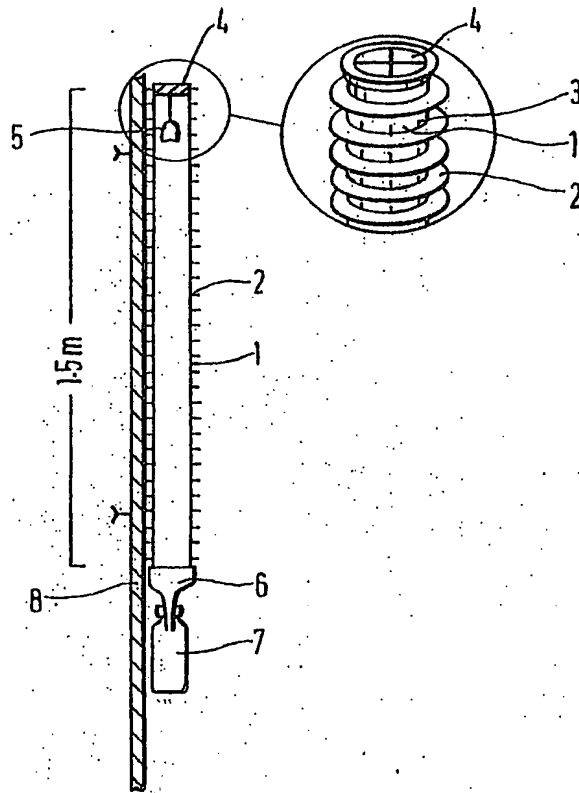
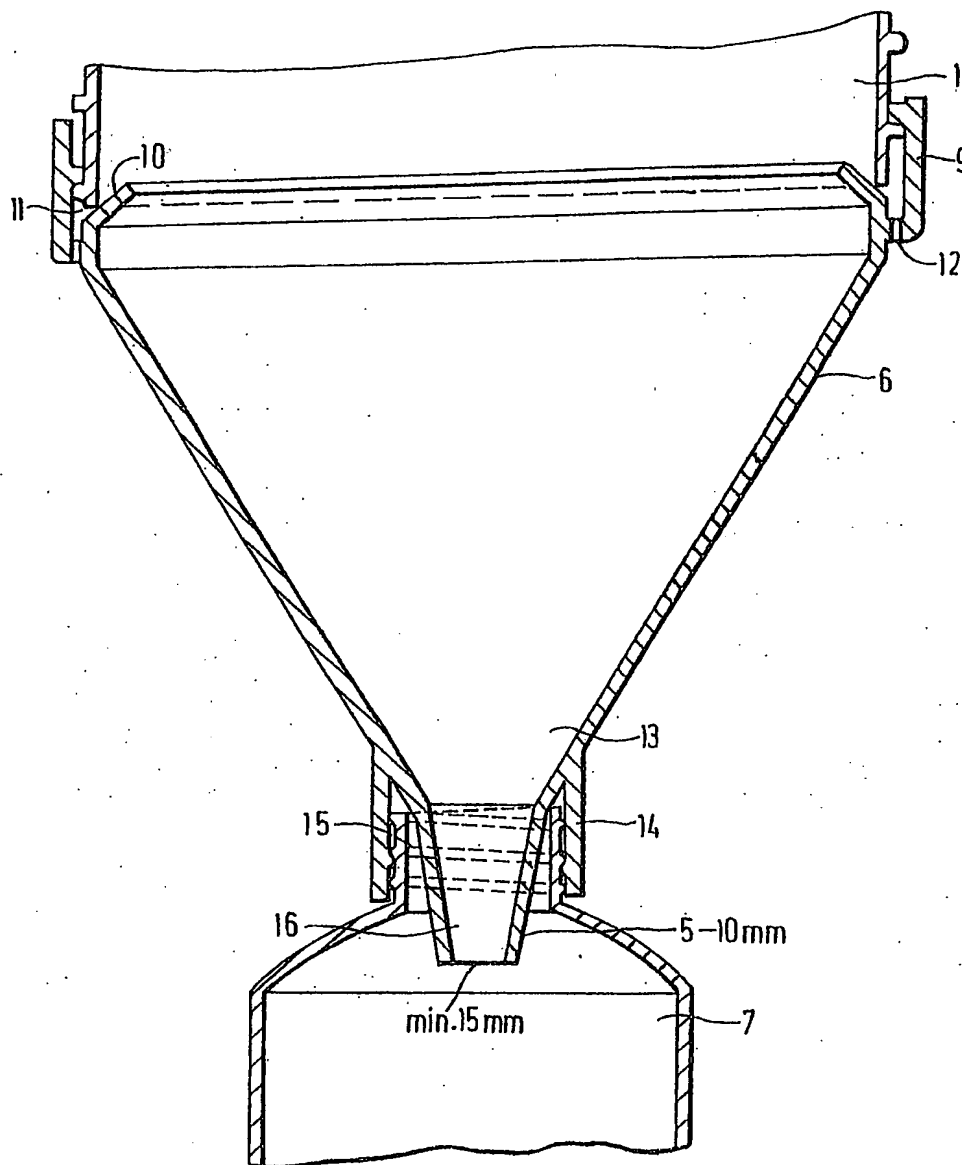


Fig. 1.

A. J. Fors + Associates



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